L. S.



Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

---

*Ex parte* KAICHI TATSUZAWA,
SHOSUKE TANAKA
and SHIGEAKI KOIKE

---

Appeal No. 94-1065
Application 07/646,222[1]

---

ON BRIEF

---

Before JERRY SMITH, HARKCOM and FLEMING, *Administrative Patent Judges*.

FLEMING, *Administrative Patent Judge*.

*DECISION ON APPEAL*

This is a decision on appeal from the final rejection of claims 7 through 9, 12 and 13.

The invention is directed to a photomagnetic recording apparatus which records digital data on a photomagnetic

---

[1] Application for patent filed January 28, 1991.

recording medium. A record light beam irradiates the photomagnetic recording disk to form a pit on the recording disk. Appellants disclose on pages 3 and 4 that the prior art systems generate a pit on the photomagnetic record disk in a tear drop shape as shown in Figure 3B. Consequently, there is a risk of generating a data error in the reproduced signal when the tear drop shaped pit is read. Appellants' invention avoids the tear drop shape pit by intermittently pulsing the record light beam. For each pulse of the record light beam, this produces a pit with a magnetic domain that is substantially circular in shape. In addition, a series of pulses of the record light beam produces a series of circular shapes with these circular shapes being arranged in sequence to be overlapped as shown in Fig 5G. Furthermore, Appellants disclose in Figures 5A through 5G a record signal that is a frequency modulated carrier signal.

Claim 7 is reproduced as follows:

7. Photomagnetic recording apparatus comprising:

means for applying a magnetic flux to a region of a photomagnetic recording medium;

a light source for irradiating said region of said recording medium with a recording light beam to form a pit;

record signal generating means for generating a record signal that is a frequency modulated carrier signal waveform having leading and trailing edges;

pulse generating means including delay means for delaying said record signal by discrete, successive time delays to produce delayed signals, and gating means for gating selected ones of said delayed signals to produce a predetermined number of pulses of predetermined width and spacing in response to at least the leading edge of said record signal; and

drive means for receiving said predetermined number of pulses and driving said light source to produce on said photomagnetic recording medium a group of substantially circular magnetic domains at the beginning of said pit.

The Examiner relies on the following references:

| | | |
|---|---|---|
| Chung | 4,873,680 | Oct. 10, 1989 |
| Sakemoto | 5,007,039 | Apr. 9, 1991 |

Claims 7 through 9, 12 and 13 stand rejected under 35 U.S.C.§ 103 as unpatentable over Chung in view of Sakemoto. On page 2 of the Examiner's answer, the rejection of claims 15 and 16 under 35 U.S.C.§ 103 is withdrawn.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the briefs and answer for the respective details thereof.

*OPINION*

After a careful review of the evidence before us, we cannot agree with the Examiner that claims 7 through 9, 12 and 13 are directed to subject matter that would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103 as evidenced by Chung in view of Sakemoto.

The Examiner has failed to set forth a *prima facie* case. It is the burden of the Examiner to establish why one

having ordinary skill in the art would have been led to the claimed invention by the reasonable teachings or suggestions found in the prior art, or by a reasonable inference to the artisan contained in such teachings or suggestions. See *In re Sernaker*, 702 F.2d 989, 217 USPQ 1 (Fed. Cir. 1983).

Appellants argue on page 6 of the principal brief the following:

> For the purposes of this appeal, appellants rely upon the "delay means for delaying" the record signal "by discrete, successive time delays to produce delayed signals" and the "gating means for gating selected ones" of the delayed signals "to produce a predetermined number of pulses ... in response to at least the leading edge" of the record signal. These features are recited as part of the "pulse generating means" of claim 7, and are not shown or suggested by the prior art.

However, in Figure 7B and in column 4, lines 6-9, Chung discloses a group of substantially circular magnetic domains to form a pit by driving a light source by a predetermined number of pulses. Figure 7B further discloses that the light source is pulsed "on" and "off" for a predetermined period. Figure 7B shows the resultant four circular magnetic domains formed for encoding code bits generated by an exemplary optical edge modulated code. In column 5, lines 19-20, Chung teaches that a circular magnetic domain (pit size) must be one minimum size. In column 6, lines 52-68, Chung teaches a pit which is larger than a

minimum pit size if formed by alternately pulsing the laser on and off periodically during the formation of the pit. In column 7, lines 25-26, Chung discloses that the time length that the laser is on is time To.

Chung discloses in column 9, lines 3-30, and Figure 2, that the encoder means encodes the data input at 40 and outputs a pulse signal for pulsing on and off the laser. More specifically, Chung discloses that the To (the laser on time) can be changed. The microprocessor control and memory 39 will output the time To signal to the programmable pulse generator 41. The programmable pulse generator 41 also receives the pulse signal from the encoding means 26. Thus, the programmable pulse generator 41 is able to generate an output pulse signal that is the pulse signal received from the encoding means 26 with a pulse width which is a function of the time To signal. This output pulse signal from programmable pulse generator 41 results in the on and off sequence of the laser shown in Chung's Figure 7B for each data bit.

Chung discloses the encoding means 26 in Figure 14 and column 20, lines 7-44. The encoding means generates three code OEM bits for each data bit according to the write state diagram of Figures 9 and 12. Rom Look-up table 217 provides the

particular three OEM code bits to Register 210 in parallel. Shift register 218 is supplied with the three bit OEM code from the register 210. The shift register 218 then outputs the code serially to the programmable pulse generator 41. Chung teaches that the encoding means 26 ensures the data bit stream period is maintained by clocking at a rate three times that of the data bit clock. Chung teaches in column 9, line 9, that the encoded signal determines the laser pulses. Chung teaches in Figure 13 the timing sequence of the encoding means 26 in which the sample data 316 is converted into a write transition state 334 that controls the laser to form the pit configuration 324. It is important to note that the encoding means maintains the original period of the sample data and thereby, does not include a delay means as claimed by Appellants' claim 7.

Appellants argue that Chung's programmable pulse generator 41 does not function as a delay means because Chung discloses the programmable pulse generator 41 as one shot pulse generator in column 9, lines 22-24, and only functions to vary the pulse width and does not delay the pulse. We agree that the programmable pulse generator 41 does not provide the delay means function. Chung teaches in column 9, lines 21-27, that the programmable pulse generator is a programmable one shot pulse

generator that generates an output pulse with a width of To. Clearly, the Chung pulse generator does not delay the data stream but only adjusts the width of the pulse within the data steam while maintaining the data stream period.

In contrast, Appellants are claiming a delay means for delaying the record signal (data stream) by discrete, successive time delays to produce delayed signals and a gating means for gating selected ones of the delays signals to produce predetermined pulses of predetermined width. Appellants disclose the delay means in Figure 11 in which the record signal s73 is delayed by time delays to produce a series of delayed signals, FM(-4) through FM(+4). Appellants disclose the gating means in Figure 12 which gates selected ones of the delay signals, FM(-4) through FM(+4), to produce a predetermined number of pulses at output S74. Clearly, Chung fails to teach the delay means for delaying the recorder signal to produce delayed signals and a gating means for gating selected ones of the delayed signals to produce a predetermined number of pulses as set forth in Appellants' claim 7. Therefore, we will not sustain the Examiner's rejection. The remaining claims on appeal also contain the above limitations discussed in regard to claim 7 and thereby, we will not sustain the rejection as to these claims.

We have not sustained the rejection of claims 7 through 9, 12 and 13 under 35 U.S.C. 103. Accordingly, the Examiner's decision is reversed.

REVERSED

JERRY SMITH )
Administrative Patent Judge )
)
GARY V. HARKCOM )
Administrative Patent Judge ) BOARD OF PATENT
) APPEALS AND
) INTERFERENCES
MICHAEL R. FLEMING )
Administrative Patent Judge )

Appeal No. 94-1065
Application 07/646,222

Alvin Sinderbrand
c/o Curtis, Morris & Safford
530 5th Avenue
New York, NY 10036